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Dialecticians and Stoics on the Classification of Propositions

In his discussion and refutation of the logical theories of dogmatist philosophers in *Adversus Mathematicos* (*M.*) 8, Sextus Empiricus treats us, among other things, to an account of a classification of propositions (*M.* 8.93–129). The doctrine reported on here is usually taken to form part of Stoic logic.¹ Together with its apparent counterpart in Diogenes Laertius (*D.L.*) 7.68–76, this Sextian report is used to reconstruct a theory supposedly held by Stoic philosophers. In what follows I shall try to refute this view and I shall argue that Sextus' report encapsulates a doctrine worked out not by the Stoic, but by the Dialectical school whose most prominent members seem to have been Diodorus Cronus and Philo.²

First I shall try to show that the two reports by Sextus and by Diogenes resp. are quite different indeed as to their systematic content and that, therefore, both reports must be drawn from different sources. In a second step it is then argued that Sextus' account is based on Dialectical material. Finally, I shall compare the Dialectical classification to be found in Sextus to the Stoic one in Diogenes with an eye to exploring these two divisions as different phases within the development of propositional logic.

I.

As to its systematic intentions, but also with regard to its terminology, the doctrine reported on by Sextus differs in important respects from the one we find in Diogenes Laertius. Both reports agree in their use of the terms denoting the simple and the non-simple proposition, but they clearly disagree when it comes to the next lower level. Most conspicuous are the differences within the subdivision of simple propositions, *i.e.* those not containing a connecting particle.

The logicians, whose theory is set out by Sextus, divide simple propositions into three classes (cp. *M.* 8.96); the Stoic philosophers as reported by Diogenes want to distinguish between six sub-groups (cp. *D.L.* 7.69). All examples used in Sextus instantiate the different kinds of proposition turn up with at most minor stylistic changes in Diogenes. However, only one of the Sextian titles for these propositions is used in Diogenes. It may be useful first to compare the two lists of (classes of) simple propositions in both authors:/
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Sextus Empiricus:

definite proposition (ὠρισμένον)

¹ Cp. Mates (1953) 30f., 54, Kneale (1962) 146, 148f., Mignucci (1965) 131, Egli (1967) 37f., Mueller (1969) 185, Frede (1974) 49-62 passim, Brunschwig (1984) 9ff.; already v. Arnim put this text, omitting some parts, among the logical fragments of Chrysippus: SVF fr. 205, 211, 216.

² Cp. D. Sedley (1977).

“This one is walking”, “this one is sitting.”

indefinite proposition (ἀόριστον)

“Someone is sitting.”

intermediate proposition (μέσον)

“A man is sitting”, “Socrates is walking.”

(cp. *M.* 8.96–97)

Diogenes Laertius:

negative proposition (ἀποφατικόν)

“Not: it is day.”

negatively assertoric proposition (ἀρνητικόν)

“No one is walking.”

privative proposition (στερητικόν)

“This one is unkind.”

categorical proposition (κατηγορικόν)

“Dion is walking.”

predicative proposition (καταγορευτικόν)

“This one is walking.”

indefinite proposition (ἀόριστον)

“Someone is walking”, “That one is moving.”

(cp. *D.L.* 7.69–70)

At first sight, Sextus’ three classes seem to fit the last three classes in Diogenes’ list: The indefinite proposition is (the only title) common to both lists; and as for the two other kinds of simple propositions in Sextus, an equivalence relation seems to be suggested by their respective instantiating examples. Thus, Sextus’ class of definite propositions seems to correspond to Diogenes’ predicative ones, and his set of intermediate propositions seems to find its opposite number in Diogenes’ group of categorical propositions.

On the other hand, the three kinds of simple propositions which come at the top of Diogenes’ list and which all contain some expression of negation do not have any counterpart in Sextus’ enumeration. This in turn implies that those classes which seem to correspond to each other in our two authors will contain the same propositions respectively only if the list in *M.* is incomplete, which is to say that, for whatever reason, some part of the list Sextus relies on, has been lost. If Sextus’ list is complete we will have to put the propositions classified according to the Stoics in Diogenes’ report as negative, negatively assertoric, and privative under the three headings provided by Sextus. This, however, would run counter to a strict equivalence between the Sextian classes and the three last divisions in Diogenes’ list.

/113 / Now, there seem to be at least two momentous arguments against the supposition, defended e. g. by Michael Frede,³ that the classification in Sextus is incomplete: First of all, if Sextus had made use of only a part of a classification (of simple propositions), it is likely that he would have told his readers that. Objections to this may be (a) that Sextus need not have informed his readers

³ Cp. Frede (1974) 66f.

about his selective use of such a list and (b) that he unknowingly might have used incomplete material. These objections, however, will not survive our second, more powerful argument based on a point of terminology: Sextus' third and last class carries the title "intermediate (literally: middle) proposition". Now talk of a "middle" with respect to non-spatial objects presupposes a triad: It makes sense in case we have three and only three objects.⁴ Whoever the author of the list in Sextus may be, by using the term "middle proposition" he leaves no doubt that for him there are three and only three classes of simple propositions. So we must conclude that the classification of simple propositions preserved in Sextus is meant to be exhaustive.

This in turn has the obvious consequence that there can be no equivalence between the Sextian classes and the last three divisions in Diogenes' list. The extension of any of the Sextian classes is bound to be wider than the extension of what seems to be its Diogenian counterpart. This fact may also help to explain why the Stoics whose theory is reported on by Diogenes, chose to use a different terminology for two of their classes. It is a further consequence of the disagreements noted so far that the two classifications must be based on different *fundamenta divisionis* and, hence, that Sextus and Diogenes must draw on sources that are systematically different.

As for the kinds of molecular or non-simple propositions, there is no enumeration in Sextus; Diogenes, however, offers us a list containing seven titles (cp. 7.69).⁵ It is probable, though never stated or implied in the text, that this classification is meant to be complete. Here is Diogenes' list (the examples are taken from the following discussion):

conditional proposition (συνημμένον)

"If it is day, it is light."

subconditional proposition

(παρασυνημμένον)

"Since it is day, it is light."

/conjunctive proposition (συνπεπλεγμένον)

"Both it is day, and it is light."

disjunctive proposition (διεζευγμένον)

"Either it is day, or it is night."

causal proposition (αίτιώδεις)

"Because it is day, it is light."

dissertive 'rather-than'-proposition (διασαφοῦν τὸ μᾶλλον)

"It is rather day than night."

dissertive 'less:-than'-proposition (διασαφοῦν τὸ ἥττον)

⁴ The Greek word μέσον is used for the grammatical medium and, in mathematics, for the mean proportional. In his syllogistic, Aristotle uses μέσον for the middle term of his syllogisms and for the second of his (three!) syllogistic figures. In all these cases we are dealing with exactly three elements.

⁵ There is a lacuna in Diogenes' text at the end of this enumeration. It is, however, unlikely that some item in this list has been lost. The following discussion of non-simple propositions (7.71–74) mentions (all and) only the kinds accounted for in Diogenes' enumeration. The lacuna regards only the ensuing sentence which seems to have contained a comment on the definition of the negative proposition.

“It is less night than day.”

(cp. D.L. 7.71–73)

Sextus, as stated above, does not bother to give us an enumeration of non-simple propositions. He repeats (*M.* 8.108) the definition of this type of proposition reported at *M.* 8.95 and starts off immediately with his first candidate, the conditional. After having stated and explained its definition (*M.* 8.109–112), he expounds the conflicting criteria for the true conditional according to Philo and Diodorus respectively (*M.* 8.113–117) and uses this conflict to buttress his sceptical position (*M.* 8.118–123). He then goes on:

From these we may pass over to the conjunctive (συμπεπλεγμένα) and to the disjunctive (διεξευγμένα), and in general to all the other forms of non-simple propositions.

(*M.* 8.124)

However, neither the disjunction nor any one of the “other forms of non-simple propositions”, whose discussion Sextus announces here, are dealt with in what follows. Only the conjunction and its criterion of truth will be discussed at *M.* 8.125–129. It is not even clear which propositions Sextus may have in mind when he talks of “other forms of non-simple propositions”. What is obvious is that the three types of non-simple proposition mentioned in *M.* do not, at least according to Sextus, constitute an exhaustive enumeration.

The three Sextian headings for non-simple propositions all turn up again in Diogenes’ report. So why not complete Sextus’ list by appending the additional types in Diogenes’ enumeration? Yet if we examine carefully the reports on non-simple propositions in Sextus and Diogenes resp., this procedure will lose all its prima facie plausibility. True, Diogenes and Sextus agree on the conjunctive proposition; there are, however, conspicuous differences when we turn to what they report on the conditional. These differences clearly are of consequence to the question as to whether we can annex the additional types of non-simple propositions to the short Sextian list. For two of these additional types – the subconditional and the causal proposition – presuppose the definition of the conditional proposition (cp. D.L. 7.74).

Sextus begins with a syntactical characterisation: A conditional proposition is composed of two different propositions (or the same proposition repeated) and the connective ‘if’ (ε or ε περ) (*M.* 8.109–110). He then introduces and explains / the two terms ‘antecedent’ (γούμενον) and ‘consequent’ (λήγον) (*M.* 8.110) in order to be able to state a semantic characterisation of the conditional: It contains the ‘announcement’ (παγγελία) that the consequent follows from the antecedent (*M.* 8.111–112). The rest of Sextus’ report is an exposition of the conflicting truth criteria for a conditional worked out by Philo and Diodorus.

Philo’s truth-functional interpretation is discussed first: According to him a conditional is true “if it does not begin with something true and end with something false” (*M.* 8.113); then we get instances for the three combinations of truth values which, according to Philo, make a conditional true (TT, FF, FT), and for the one that makes it false (TF) (*M.* 8.113–114). Next we get a statement of Diodorus’ criterion: According to him, a conditional is true if “it neither was nor is able to begin with something true and end with something false” (*M.* 8.115). After that, Sextus adduces examples which come out true according to the Philonian criterion but false as soon as the Diodorean criterion is used (*M.* 8.115–117).

The Stoic truth criterion for the conditional, according to Diogenes Laertius (who in this passage seems to rely on Chrysippus and Diogenes of Babylon, cp. D.L. 7.71), is rather different: It is the criterion of ‘cohesion’ (συνάρτησις) though this term does not show up here: A

conditional is “true if the contradictory of its consequent is incompatible with ($\mu\acute{\alpha}\chi\epsilon\tau\alpha\iota$) its antecedent” (D.L. 7.73).

Sextus’ report on the truth criteria of the conditional is based exclusively on the two Dialecticians Philo and Diodorus, Diogenes, on the other hand, in his discussion of this type of proposition has an explicit reference to logicians of the Stoic school. Hence we may safely draw the conclusion that both authors, at least as far as this part of their respective reports is concerned, rely on two different sources and, moreover, that Sextus is using a non-Stoic source. But what is the precise systematic relation between the theories in these two sources? And in particular, to what extent do the three doctrines reported on by our two authors agree or disagree?

Clearly the Stoic truth criterion for the conditional is incompatible with Philo’s truth-functional criterion since the truth condition stated in the latter is not a sufficient but only a necessary condition for a true Stoic conditional. It seems to be more difficult to distinguish the Stoic from the Diodorean criterion. Two recent authors, Urs Egli and Josiah B. Gould, have independently come to the conclusion that the Diodorean and the criterion of ‘cohesion’ are equivalent.⁶ This view is contradicted by the explicit testimony of Sextus (*Pyrrhoniae Hypotyposes* [P.]. 2.110–111). Since the Stoic criterion of ‘cohesion’ almost certainly was also Chrysippus’ criterion,⁷ this claim is also contradicted by Cicero who tells us that Diodorus, Philo and Chrysippus each advocated a different interpretation of the conditional (cp. *Acad.* 2.143).

Egli takes the Stoic criterion for the truth of “if p, then q” to mean that p and \neg q will never be true together. Hence, for him “‘p and \neg q’ is always false” is a sufficient and not only a necessary condition for the truth of “if p, then q” as defined by Stoic / ‘cohesion’. But this is clearly not the case: Take any conditional proposition whose antecedent is always false and whose consequent contains the contradictory opposite of the antecedent, e.g. “if 33 is a prime number, then it is not the case that 33 is a prime number”. This conditional fits Egli’s account for the alleged Stoic criterion since the conjunction of antecedent and negated consequent will always be false because of the falsity of the antecedent. Yet one could hardly claim that in this conditional the negated consequent is incompatible with the antecedent; after all, the negated consequent is equivalent to the antecedent, at least according to the Stoic theory of the negator (cp. D.L. 7.69).⁸ Hence, I take

⁶ Egli (1967) 39ff. and Gould (1967) 160f., also (1970) 81. Since Gould does not argue for this result but sees it as a rather unwelcome consequence of his interpretation I shall restrict my discussion to Egli’s account who explicitly aims at showing this equivalence.

⁷ Cp. Frede (1974) 82f.

⁸ The example given above corresponds to the example provided by Sextus in P. 2.110 to illustrate what will be a true conditional according to Diodorus and a false one according to the criterion of cohesion: “if there are not partless elements of things, there are partless elements of things.” Sextus explains that this conditional is Diodorean-true because it will always have a false antecedent. Egli thinks he has a way out by claiming that for the Stoics this conditional will always be false because of their physical theory: They opposed atomism, and hence the antecedent of this example for them was always true, the consequent always false, the example therefore false (cp. Egli [1967] 40). I think that this counter-argument misses the point of Sextus’ strategy. First of all, Sextus does not tell us that he is criticizing a criterion advocated by the Stoics but only refers to “those who introduce cohesion” (P. 2.111); he is comparing different *logical* theories. Secondly, even if the (presumably Stoic) logicians referred to here were entitled to reject this example as false because of their physical theory, their criterion for the conditional alone will not justify them in doing so. Thirdly, even if Egli were right, we could easily construct an example which carries the same logical difficulty and which cannot be dismissed on the ground of a physical theory: We could switch the antecedent and the consequent of the Sextian example around and thus bring it into agreement with Stoic natural philosophy, or else we could use an example uncontroversial for both Diodorus and his Stoic critics, like the one I have used above.

– For the refutation of another argument put forward by Egli cp. Ebert (1991) 94ff.

it for granted that the Diodorean and the Stoic criterion of the true conditional are not equivalent.

II.

To return to our comparison of the two lists of non-simple propositions in our two authors: Since we have established that the Stoic and the Diodorean criterion for the conditional are systematically different, we may exploit this difference to achieve more clarity on other items in these two lists as well. For the concept of “following from” which the Stoic philosophers redefined in terms of cohesion is put to use in the definition of the subconditional as well as in the truth conditions for this one and for still another, *i.e.* the causal proposition (cp. D.L. 7.71, 74).

Diogenes Laertius, referring to the *Dialectical Handbook* by Crinis, first gives a syntactical definition of the subconditional (παρασυννημμένον), stating that it is “a proposition joined subconditionally by the connective ‘since’” (D.L. 7.71). In the following semantic characterization of this proposition (the statement of its παγγελία) we again encounter the notion of “following from” (κολουθεῖν): The connective ‘since’ “announces both that the second follows from the first, and that the first is the case” (D.L. 7.71). This Stoic account is meant to explicate the subconditional / in close connection to the conditional; the subconditional is a Stoic conditional with a true antecedent. Therefore the Stoic criterion for the truth of the conditional is a necessary condition for the truth of the subconditional. Its close connection to the conditional is also expressed by its name.

For the Stoic causal proposition (α τῶδες), when it first turns up in Diogenes’ list, we get only a syntactical, not a semantic account. Thus, there is no occasion to bring in the concept of “following from”. This proposition is described as the one that is governed by the connective “because” (διότι). The material used for illustration is again the well-known couple “It is day” and “It is light” (“Because it is day, it is light.”) Diogenes’ concluding remark is meant to explain the name of this proposition: “For the antecedent is, as it were, the cause of the consequent.” (D.L. 7.72)

Yet the concept of “following from” plays a major role for both the subconditional and the causal proposition as soon as we come to the statements of their respective truth conditions (cp. D.L. 7.74). A (necessary) condition for the truth of each of these two propositions is stated using the same words for both: The subconditional as well as the causal proposition have “to begin with something true and end with something following (*i.e.* from the antecedent)” (ἀρχόμενον ἀπ’ ἀληθοῦς εἰς ἀκόλουθον λήγει D.L. 7.74). These words may remind us of the closely similar formulation used for the TT case in the truth-functional account of the conditional, *e.g.* in Sextus (cp. M. 8.245, 247): There the conditional, in the TT case, is said “to begin with something true and end with something true” (ἀπὸ ἀληθοῦς ἀρχόμενον εἰς ἀληθές λήγει M. 8.245). Yet the close similarity of the wording brings out even more clearly the difference in meaning: Given the truth of the antecedent, the truth of the consequent is, for Diogenes’ Stoics, no longer a sufficient, but only a necessary condition for the truth of the conditional. The consequent, in addition, ought to *follow from* the antecedent in a way defined by the new criterion of cohesion.

Thus we arrive at a final conclusion regarding the relation between the two lists of non-simple propositions preserved in Diogenes and Sextus resp. The Stoic definitions of (the truth of) the subconditional and the causal proposition presuppose the Stoic criterion of the true conditional. Since this criterion is equivalent neither to the Philonian nor to the Diodorean one, it follows that

these two types of proposition, as we find them defined in Diogenes' list (and we do not hear of any other definitions), cannot have belonged to the rest of the list of non-simple propositions which Sextus may have had in mind. Even if Diogenes' Stoics may have used truth-functional definitions for the conjunctive and the disjunctive proposition (cp. D.L. 7.72 where the disjunction is defined in a truth-functional way) the difference between the criteria used for the conditional and the two propositions dependent upon its account still warrant the conclusion that Sextus and Diogenes are using two systematically different sources.⁹

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/ Now from the material used in Diogenes we may draw another important conclusion: This material seems to come almost exclusively from Chrysippus and his followers. Among the nine authorities quoted or referred to in D.L. 7.42–83 there is not a single pre-Chrysippean Stoic.¹⁰ Chrysippus and Diogenes (of Babylon) hold the lion's share; their names occur almost exactly as often as the other seven names taken together. The absence of any mention of Chrysippus' predecessors, in particular of Zeno and Cleanthes, stands in marked contrast to their role in Diogenes' account of Stoic ethics and physics.¹¹ This finding clearly indicates that what we read in Diogenes on Stoic logic is drawn from Chrysippus and later Stoic logicians; if Chrysippus' Stoic forerunners had a logic of their own, it is certainly disregarded in what Diogenes Laertius tells us about Stoic dialectic.

III.

From the results obtained so far we may safely conclude that Sextus' account in *M.* 8.93–129 contains no material taken from Chrysippus or his followers. Yet this will not suffice to show that he has preserved a doctrine held by the Dialecticians. After all, the people he labels "dialecticians" might still be Stoic logicians antedating Chrysippus. The view that Sextus is discussing Stoic philosophers in *M.* 8.93 ff. seems to be supported by what precedes this passage.

It is in fact quite obvious that Sextus, in the preceding context of *M.* 8, directs his fire against Stoic positions. This book intends to criticize the opinion held by all dogmatic philosophers that anything can be true (cp. *M.* 8.1). Starting with *M.* 8.67, it is Stoic dialectic that comes under attack: Its views on the true are to be shown as untenable. The object of attack is further narrowed down from *M.* 8.73 onwards: It is the Stoic claim that propositions (ξιώματα) are what is true. Sextus first attacks the possibility of proof for the existence of propositions (*M.* 8.75–77), next the possibility of propositions (*M.* 8.78–84), and finally puts forward the argument that even if the existence of propositions were to be conceded, the sceptic still will not allow the existence of something true and something false (*M.* 8.85 ff.). Our passage *M.* 8.93–129 now falls within the range of this argument. For, the classification of propositions expounded and discussed by Sextus in these paragraphs follows immediately upon the following conditional statement:

⁹ We may disregard the two types of dissertive proposition in Diogenes' list since Diogenes does not tell us anything about their respective truth conditions as he does for the conditional, the subconditional and the causal propositions. Moreover, these two propositions clearly cannot be defined in a truth-functional way, neither in the straightforward Philonian manner nor in a modally modified truth-functional way in the manner of Diodorus.

¹⁰ Here is a list of Stoic philosophers whose names turn up in Diogenes' report (together with the number of occurrences): Chrysippus 11, Diogenes 6, Antipater 5, Crinis 4, Posidonius 3, Apollodorus 2, Archedemus 2, Boethus 1, Athenodorus 1 (the last name raises suspicions, cp. Egli [1967] 37).

¹¹ Here is a corresponding list of the names of pre-Chrysippean Stoics in the ethics as well as the physics report in D.L.: Ethics: Zeno 8, Cleanthes 5, Persaeus 1; Physics: Zeno 11, Cleanthes 4, Sphaerus 2.

/If the true is a proposition, it certainly is either a simple or a non-simple proposition or a proposition that is both simple and non-simple. M. 8.93

This statement is immediately followed by:

For the dialecticians say that virtually the first and chief difference among propositions is that between simple and non-simple. Those are simple etc. *ibid.*

Hence, there can be no doubt that Sextus' remarks in *M.* 8.93–129 are meant to contribute to his critique of a Stoic doctrine. Is not this fact irrefutable evidence to the effect that the “dialecticians” discussed in this passage are taken to be Stoic logicians, as they have been taken to be by scholarly opinion all along? After all, Sextus, by arguing that the true is not to be found in any one of these classes of propositions, intends to refute a thesis which is unequivocally Stoic, the thesis contained in the antecedent of the conditional quoted above; Sextus' overall argument is in *modus tollens* form. Are we not bound to assume that the doctrine encapsulated in the consequent of this conditional is also a Stoic doctrine?

There are, however, several difficulties with this seemingly plausible assumption. First of all, an important part of the doctrine reported on here by Sextus, i.e. the conflicting criteria for the truth of a conditional, are explicitly ascribed to Philo and Diodorus resp. (cp. *M.* 8.113–117). Both were “dialecticians” in the narrow (i.e. school) sense of the word, not Stoics. Yet if Sextus, in his exposition of a theory whose refutation is to lead to the dismissal of a Stoic thesis, is able to introduce positions expressly attributed to logicians who are (and are known to be) not Stoics, then quite obviously we are not justified in drawing the conclusion that the classification of propositions Sextus sets out to refute must be of Stoic origin. If, however, part of the material discussed by Sextus is not Stoic, then it is not merely possible but even probable that all of this theory did not originate in the Stoa.

A second difficulty that those who find a Stoic position in these passages will have to confront (and a point that will strongly support the contrary claim) is the following: Sextus who, in the preceding text (i.e. *M.* 8.67–90), has referred to the Stoics quite often – eight times altogether – using their established name (οἱ στωικοί, οἱ ἀπὸ τῆς στοᾶς) when he comes to the passage *M.* 8. 93–129 nowhere refers to the champions of the doctrine criticized as “Stoics” but exclusively – six times altogether – as “dialecticians”. This label, in turn, is never used in the preceding text although this text clearly contains a discussion of Stoic dialectic. This observation, based on a point of terminology, provides, even on its own, rather strong evidence for the contention that, in *M.* 8.93 ff., we have come across a Dialectical doctrine.

That the term “dialecticians”, as used in this passage, refers to Dialecticians is further supported by the fact that both Philo and Diodorus are implicitly stamped as “dialecticians”: Their conflicting views on the criteria for the true conditional are meant to illustrate the controversy among the “dialecticians” about the relation of consequence in a conditional (cp. *M.* 8.112, 118, 119).

/That this is in fact so, i.e. that here “dialecticians” is meant to refer to the Dialecticians, not to logicians in general (including those of the Stoa) is corroborated by the absence of the specifically Stoic position in this controversy, i.e. the criterion of cohesion (συνάρτησις) for the true conditional. Wherever Sextus, in other passages, has occasion to mention this debate, the Stoic position is always taken into account (cp. *P.* 2.110–112, *M.* 8.265). Its absence in an argument which primarily aims at the refutation of a Stoic doctrine, could hardly be explained if the “dialecticians” discussed in *M.* 8.112–119 were simply logicians quite generally. In 8.112–119 the word “dialecticians” can only mean “Dialecticians”. Yet since a change in the meaning of

“dialecticians” within the longer passage *M.* 8.93–129 is quite unlikely, these observations again bring us to the conclusion that the classification of propositions preserved in this Sextian text belongs to the Dialecticians, not to Stoic philosophers.

Yet how can this conclusion be reconciled with the undeniable fact that Sextus in *M.*8.93–129 sets out to attack a Stoic position? How can he hope to achieve this aim by way of a *modus tollens* argument when he uses as his major premiss a conditional whose antecedent contains a Stoic and whose consequent a Dialectical thesis?

Now I do not think that this difficulty is as great as it looks. For, all we have to assume to get Sextus’ argument working is the supposition that the Stoics shared the Dialectical doctrine reported by Sextus, not that this doctrine originated with them. This supposition is supported by our knowledge about the logic of the first Stoics. Zeno, the founder of Stoicism, is reported to have learned his logic from the Dialecticians Philo and Diodorus (cp. *D.L.* 7.16 and 25). Furthermore, among the titles of logical writings attributed to pre-Chrysippean Stoics there are several that have a counterpart in Dialectical material. Thus both Cleanthes and his pupil Sphaerus have written a treatise “On Predicates” (cp. *D.L.* 7.175 and 178; *FDS* 192 and 193); the same topic was treated by Clinomachus (cp. *D.L.* 2.112; *SSR* II I 1), who was apparently styled as the first Dialectician by later members of the school.¹² Cleanthes also wrote a book “On Modes of Inference” (περὶ τρόπων *D.L.* 7.175; *FDS* 192); it has a counterpart in a work by Philo whose title has been preserved in the inventory of Chrysippus’ writings who wrote against this Philonian treatise (cp. *D.L.* 7.194; *FDS* 194). Still another title in this Chrysippean catalogue contains a trace of a work “On Amphibolies” (περὶ ἀμφιβολιῶν) by the Dialectician Panthoides, a title we also encounter in the enumeration of Sphaerus’ books (cp. *D.L.* 7.178; *FDS* 193).¹³

Our information on any writings by Dialectical logicians is rather scarce; in view of this fact and in view of the fact that no more than a dozen of the writings attributed to pre-Chrysippean Stoics deal with logical matters, these coincidences are indeed rather impressive. All this evidence taken together suggests rather strongly that the pre-Chrysippean Stoics, as far as their logic is concerned, are dependent upon the logic of the Dialectical school. Hence it is quite possible that / they endorsed the Dialectical classification of propositions, so that a refutation of this doctrine could also be used to damage an epistemological thesis of the Stoics.¹⁴ And that will be sufficient to fight off the claim that Sextus could not use in his *modus tollens* argument a conditional with a Stoic

¹² For Clinomachus as Dialectician cp. Sedley (1977) 76; s. also *SSR* I H 7, II I 1-4 and Döring (1972) 101.

¹³ For Panthoides as a member of the Dialectical school, cp. *D.L.* 5.68; *SSR* II Q 1.

¹⁴ The Stoics discussed by Sextus in *M.* 8.67 ff. are then, at least in part, pre-Chrysippean Stoics. This is in agreement with Sextus’ text in *M.* 8 up to our passage: He refers to the Stoics exclusively by the general name of the school and never mentions a single Stoic philosopher. I have added the qualification since, for reasons expounded below (p. 122), I think that what is said about the use of the negator at *M.* 8.87–92 was part of Chrysippean logic. This short passage, however, seems to be an interpolation, as Sextus himself indicates by his words in the text immediately following: ἐπισυνάπτοντες . . . τοῖς προκειμένοις (*M.* 8.93). For the Stoic theory of negation cp. also Cavini (1985) 47ff.

antecedent and a Dialectical consequent.

IV.

The arguments put forward so far have, I take it, shown that the classification of propositions which Sextus has preserved in *M.* 8.93-129 goes back to the Dialecticians and is not of Stoic origin. To establish this result we obviously had to rely more on the differences than on the agreements between Sextus and Diogenes. Yet the common ground in parts of the terminology as well as in many of the examples used for illustration also clearly indicates that the two classifications have not been created independently. Since what we find in Diogenes is later than the Dialectical classification in Sextus, this means that the Stoic division of propositions took its rise from the Dialectical one. Thus the question to be asked is what motives may have caused the (Chrysippean) Stoics to change the Dialectical material the way they did.

The most conspicuous difference between the Sextian and the Diogenian exposition regards their respective grouping of simple propositions. It has been shown above (p. 113) that the Dialectical tripartition is meant to be complete and, hence, that there is no relation of equivalence between the three Sextian classes of simple propositions on the one hand and the last three classes in the Stoic subdivision, i.e. the categorical, predicative, and indefinite proposition respectively, on the other. What motive(s) did the Stoics have for these changes?

If the Dialectical classification of simple propositions is (meant to be) complete, then propositions like “this one is not sitting”, “Socrates is not sitting” or “someone is not sitting” have to be assigned to one of these groups. Now I take it for granted that a proposition like “this one is not sitting”, as well as its affirmative counterpart is “uttered indicatively” (κατὰ δεῖξις cp. *M.* 8.96) and that it is therefore to be classified as a definite one. After all, in the account of the definite proposition we find in Sextus, this is all that is required for a proposition to be definite. So any proposition with a demonstrative pronoun in subject position is likely to meet this requirement. Nothing in Sextus’ exposition compels us to restrict this class to affirmative propositions. /

/Analogous considerations lead to the conclusion that “someone is not sitting” is an indefinite proposition (it is governed by an indefinite particle, cp. *M.* 8.97) and that “Socrates is not sitting” is an intermediate proposition for it is neither definite nor indefinite (cp. *M.* 8.97). In general, the definitions of simple propositions in Sextus seem to be based on the grammatical subject expression alone.

Now we know from a report in Alexander of Aphrodisias (*in APr.* 402, 3 ff. Wallies; FDS 921) whose significance as a source for Stoic dialectic has been discovered by A. C. Lloyd¹⁵ that “some philosophers” (τινέες) did not regard a proposition with an internal negation as the contradictory opposite of the unnegated proposition. In their view “Callias is walking” and “Callias is not walking” may both be false, if Callias is no longer existent (cp. *in APr.* 402, 15-18; FDS 921). Thus, the logicians discussed by Alexander took statements with a proper name in subject position to be disguised existence statements. Similarly, according to Alexander, they claimed that “this one is walking” and “this one is not walking” could both be false, if the person referred to is not a man but a woman (cp. *in APr.* 402, 21-23; the Greek demonstrative pronoun, unlike its English counterpart, has different forms for the three genders). In their view, the

¹⁵ Cp. Lloyd (1978) 289

logically proper negation of “p” had to be of the form “not: p”.

Alexander does not tell us whom he has in mind. Yet, though there is no explicit reference to the Stoics in this passage, I think that Lloyd and, following him, Hülser are right in regarding the philosophers reported on here as Stoics. If Stoics, they can only be Chrysippean Stoics, for by the time of Alexander the only Stoic logic was that of Chrysippus. We do not hear of similar semantic qualms from the Dialecticians, and I think it is a fair assumption that the Dialecticians, like Aristotle, whom Alexander tries to defend against this Stoic doctrine, took “Socrates is not sitting” to be the negation of “Socrates is sitting”. For the Stoics, however, a pair of propositions of this form expresses only a contrary, not a contradictory opposition.

Thus Alexander’s Stoics advocated a semantic theory compelling them to distinguish between “this one/Socrates is not sitting” and “it is not the case that this one/Socrates is sitting”. Only the latter proposition is the proper negation of “this one/Socrates is sitting”; so, if the Stoics insist on placing the negator in front of the negated proposition, one reason for this is drawn from semantic considerations: They contend that the use of proper names and of demonstrative pronouns implies certain suppositions which, in their view, make it impossible to negate propositions with such terms in subject position by negating the predicate.

Now it can easily be seen that this Stoic doctrine is of consequence to the classification of simple propositions. For as long as your simple propositions allow only for internal negation, you can classify them according to the type of subject expression used. Yet, if you have to put the negation sign in front of the proposition for the reason explained, the subject expression, now subordinated to the negator, can no longer be used for the purpose of classifying propositions. For the negated statement, provided it is true, now covers two quite different cases: The case where the object denoted by the subject expression does not have the property indicated by the predicate term and, secondly, the case where there is no object to be referred to by the subject expression. For this reason, I take it, the Stoics had to introduce a new class for the negated simple propositions, the ‘negative propositions’ (ἀποφατικά).

Now if this was the reason the Stoics had to introduce their new class of negative propositions, it may also help us to explain why the Stoics invented new headings for two of their three classes that, in a sense, correspond to the three Dialectical classes of simple propositions, but not for the class of indefinite propositions. Above (p. 120) I argued that the Dialecticians had assigned the proposition “this one is not sitting” as well as “this one is sitting” to the group of definite propositions, and similarly “Socrates is walking”/“Socrates is not walking” to the class of intermediate propositions. Where is the second member of these pairs of propositions to be placed in the Stoic schema? From the fact that the Stoics advocated a new theory of negation (and, hence, cannot have taken the propositions in these pairs as contradictory) it certainly does not follow that they had to put them under different headings. These propositions clearly cannot be put into the class of negative propositions, and the other two possible candidates, the negatively assertoric and the privative proposition, do not look more hospitable either. So I assume that the first pair falls into the Stoic class of predicative propositions, the other one into the class of categorical propositions.

Thus the difference between the Dialectical classes of definite/intermediate propositions on the one hand and the Stoic classes of predicative/categorical propositions on the other is not based on their containing different types of sentences. They are distinguished not by the types of sentence classified (in fact they contain the very same types of sentence) but by the *different*

semantic interpretation applied to these sentences when they contain a negative particle: Where the Dialecticians see a contradictory, the Stoics only recognize a contrary opposition. In this situation, retaining the headings used by the Dialecticians would have been rather confusing for the Stoics.¹⁶ So they introduced a new terminology for these Dialectical classes and christened them predicative (καταγορευτικόν) and categorical (κατηγορικόν) respectively.

Yet why did the Stoics leave the title for the third Dialectical group of simple propositions unchanged? Why did not Chrysippus, who wrote two treatises on this class of propositions (cp. D.L. 7.190; *FDS* 194), introduce a new heading for them? The reason for this, it seems to me, lies in the fact that the difficulty with the other two classes discussed above does not arise here. “Someone is not sitting” is not the contradictory or else the contrary opposite of “Someone is sitting”. Two propositions of this form are always mutually compatible. Since there is no relation of opposition between two propositions of this form and, therefore, in contrast to the grammatically analogous pairs of definite/predicative or intermediate/categorical propositions, no room for a different semantic interpretation, the Stoics had no reason to replace the technical term used by the Dialecticians by a new one. Incidentally, this shows that the Stoics were more economical in their invention of new terms than they are sometimes thought to have been.

/124 We have thus found a plausible motive for the Stoic creation of a new class of negative propositions (ἀποφατικά), a motive which also sheds some light on the terminology used for the last three items in the Stoic list of simple propositions. The scarcity of the extant material, however, makes it rather difficult to produce more than (at best, plausible) conjectures for the introduction of the two new classes of the the negatively assertoric (ἀρνητικόν) and the privative proposition (στερητικόν). As their titles and the examples used for illustration suggest, these classes owe their existence to a reflection about the different logical role of expressions with a negative force. Is it possible to arrive at more specific conclusions?

For a start, let us ask why the Stoics did not put these propositions in one of the other classes of their schema. Thus, why did they not classify the example illustrating a negatively assertoric proposition “no one is walking” as a categorical proposition? After all, the example consists of a nominative case and a predicate, as required by the definition of this type of proposition (cp. D.L. 7.70; LS 34K). I suspect that once again the reason for the Stoics to proceed as they did is to be found in their semantic theory discussed above: Whereas subject expressions like “this one”, “Callias” or “this Athenian”, according to the Stoics, presuppose the existence of the objects denoted by these expressions, no such presupposition is at work when terms like “nobody” or “no one” are used. Moreover, the negation of a proposition like “no one is walking” is equivalent to another simple proposition, i.e. “someone is walking”, whereas the negation of a categorical (or, for that matter, a predicative) proposition, on the basis of Stoic semantics, is always equivalent to a *disjunction* of propositions. For the formalistic logicians of the Stoa this may very well have been a reason to create the class of negatively assertoric propositions.

The example illustrating the privative proposition is: “This one is unkind.” (ἀφιλόνηδρος ὅς ἐστιν οὗτος DL 7.70). In the Greek wording, the predicate is put at the start of the proposition, a feature that cannot be imitated in English. Again we may ask why this example does not qualify as a predicative proposition, for it consists of a nominative demonstrative case and a predicate, as

¹⁶ In any case, the most they could have retained is the heading “definite proposition” since in the longer list of the Stoics the label “intermediate proposition” would have lost its sense anyhow.

required by the definition of this type of proposition (cp. D.L. 7.70; LS 34K).¹⁷ After all, the class of predicative propositions comprises, as I have argued above (p. 122), simple propositions with a negated predicate, like “this one is not sitting”. So why should there not also be predicative propositions with a privative predicate?

We get an answer to this question, if we heed the wording of the Greek example. The privative predicate is put at the start of this proposition. This can hardly be accidental. For in all the other Stoic examples illustrating types of simple proposition, it is always the first word that determines the specific character of the proposition. The advantage of this arrangement is obvious: The logical form or type /of a proposition can be read from the first word. Now seen in this context it will seem quite natural that the word containing the privative particle comes at the beginning of the privative proposition.

A further point that deserves attention in this context is the following: The propositions with a negated predicate do not allow for a similar manoeuvre. For putting the negated predicate in first position would change the character of the proposition since the negative particle “not” will have to be taken as a negation of the complete sentence following upon it, not merely as a negation of the single word it precedes. Hence, what was only a contrary opposite of the proposition without a negative particle now has become its contradictory opposite. The privative particle, however, is firmly attached to the predicate expression and remains part of it regardless of its position in the proposition. Unlike the negation sign “not”, it cannot be taken to be connected to an explicitly formulated proposition, but only to a proposition that is not explicitly formulated, or, to now use the formula from the Stoic definition of the privative proposition, to a ‘potential proposition’ (ἀξιωμα κατὰ δύναμιν D.L. 7.70).

Hence, the definition of the privative proposition as reported by Diogenes Laertius is given with an eye to a property of this proposition, whose significance comes out most clearly in comparison to the propositions with a negated predicate. This observation now can provide us with a plausible conjecture as to the reason the Stoics had for their introduction of a special class of privative propositions. It seems that the Stoics were eager to use the possibility for a further differentiation of simple propositions, a differentiation feasible in the case of privative propositions, but not so in the case of propositions with a negated predicate, at least not if the Stoics wanted to stick to their general rule to have the first word of a proposition indicate its logical type.

V.

How, then, do the Dialectical and the Stoic treatment of non-simple propositions differ? The Stoics, as we have seen above (p. 115f.), gave a semantic interpretation, different from that of the Dialecticians, for one of these propositions, i.e. for the conditional, and they used this redefined conditional in their definitions of two other propositions, the subconditional and the causal one, two types of proposition which do not have counterparts in the doctrines Sextus attributes to the Dialecticians. There is, however, no indication that the Stoics intended to rearrange the Dialectical material concerning the non-simple propositions in a different classification of their

¹⁷ Egli (1967) 37 takes this to be the case “In der Tat müßte das Beispiel für eine privative Aussage auch ein katagoretikon sein, so daß diese beiden Kategorien nicht in einer Einteilung einander gegenübergestellt werden dürfen.” Yet a similar argument could be used to turn the predicative propositions (καταγορευτικά) into categorical ones, for any proposition which consists of a nominative demonstrative case and a predicate, also consists of a nominative case and a predicate. Hence we had better stick to the idea that the Stoic classification is meant to be mutually exclusive.

own, as they did with the simple propositions. Hence, there is also no introduction of new headings for the older Dialectical ones: What was classified as a conjunctive, a disjunctive or a conditional proposition with the Dialecticians, remains so with the Stoics and is classified under the same titles.

There is, however, another point where the Stoic handling of non-simple propositions, as reported by Diogenes, shows a telling difference in comparison to the Dialectical procedure. Whereas the Dialecticians seem to base their doctrine on the usage of propositional connectives as found in every day discourse, their Stoic / successors apparently aim at a logico-linguistic standardization of sentences containing these particles. Thus the Dialecticians define the conditional as the proposition composed of other propositions by means of one of the two Greek particles for 'if', εἴ or εἴπερ (cp. *M.* 8.109); both Greek expressions tum up in the two examples illustrating this type of proposition (cp. *M.* 8.110); The Stoics, however, allow only one of these two particles to be used, i.e. εἴ (cp. D.L. 7.71), and all their examples are built using this word. Furthermore, while the Dialecticians take into account that the antecedent, in the wording of a conditional in ordinary parlance, may follow the consequent (cp. *M.* 8.110), in all the many Stoic examples for conditional propositions, the antecedent invariably precedes its consequent.

A similar observation can be made regarding the particle employed in a conjunction. The Dialectical example for this type of molecular proposition at *M.* 8.125 uses the single καί to connect the two propositions, equivalent to the English 'and'. The sentence illustrating a conjunction in Diogenes' report differs from the Dialectical one merely in its use of the twofold καί (cp. 7.72), and this seems to be the standard form of the conjunctive proposition with the Stoics.¹⁸ Here the Stoics have committed themselves to a formula less usual in normal Greek than the one employed in the Dialectical example at *M.* 8.125.

A similar picture emerges when we come to Stoic disjunction. Here again the Stoics do not use the single 'or' (Greek ἢ), but a more cumbersome formula, i.e. ἢτοι . . . ἢ . . . (cp. D.L. 7.72).¹⁹ The effect of using these formulas for the conjunction and the disjunction is the same in both cases: There is always an expression placed before the first conjunct (or disjunct) signalling the logical form of the complex proposition. These standardizations introduced by the Stoics have the obvious aim to have the first word of a proposition indicate its logical form. It is in agreement with this finding that in all the instances for the other non-simple propositions

¹⁸ The passages containing examples for conjunctive propositions in Stoic logic in their majority fall within the discussion of the third *Anapodeiktos* (or else of arguments having a negated conjunction as their first premiss). We find the formula οὐχὶ καί . . . καί. in the following passages: *M.* 8.226,227; Pseudo-Galen. *Hist. Phil.* cap.15,607,16f. Diels (= FDS 1129); Galen, *Inst. Log.* 14.7 34,4 (= FDS 1136); Ammonius, in *APr.* XI,31. The Aristotelian commentators, not realizing the specific character of Stoic logic as propositional, sometimes have the twofold καί when negating a conjunction of predicates, e.g. Ammonius, in *APr.* 68,29 (= FDS 1132), Philoponus, in *APr.* 245,20f. (= FDS 1133). The twofold καί is not always used when we encounter conjunctions in reports on Stoic logic; Sextus, for one, when stating the major premiss in a third *Anapodeiktos*, in three passages uses the single καί (cp. *P.* 2.158,201). I think that this can be explained by the fact that most authors to whom our knowledge of Stoic logic is due were not sensitive to the formalistic outlook of Stoic logic.

¹⁹ It is true that the examples used by Sextus at *M.* 8.95 to illustrate types of (Dialectical) non-simple propositions all show the same features as the Stoic ones. Yet the two types discussed in what follows, i.e. the conditional and the conjunctive proposition (cp. *M.* 8.110 and 125 *resp.*), are both provided with examples that do not conform to these specimens. (Unfortunately, there is no discussion of the disjunctive proposition.) Therefore, I take it for granted that the Dialecticians were not committed to the form exhibited by the complex propositions at *M.* 8.95 as canonical.

(including the two disjunctive ones) the connecting particle is invariably placed at the beginning of the proposition, despite the fact that for the conditional, the subconditional / and the causal proposition, the clause containing the connecting particle can be placed in second position without violating any grammatical or stylistic rules.

The Stoics have thus introduced a twofold standardization for the wording of complex propositions. Firstly, for any propositional operator, they admit only one expression in normal language, and secondly, they arrange the parts of non-simple propositions in such a way as to have the first word signal the logical form of the complex proposition. Since the Stoics request that the negator be placed in front of the proposition to be negated (cp. D.L. 7.69), this procedure provides a great transparency to the formal structure of even rather complex propositions. The basic idea is the same as the one underlying the so-called Polish notation developed by L. Chwistek and J. Łukasiewicz: The scope of any operator in propositional logic is indicated by its position, so that you can do away with brackets altogether.

To conclude, let us compare once again Dialecticians and (Chrysippean) Stoics. The Dialecticians, it seems, took their dialectic to be a theory of the logical features embedded in our ordinary language. The Stoic logicians of the school of Chrysippus, however, deliberately ignored the great variety offered by ordinary language to express logical relations and set out to build a logically transparent ideal formal language, a language where the linguistic form is merely the mirror of the logical form. The idea of propositional logic as a strictly formal theory was born with the Stoics.²⁰

²⁰ A German version of this paper was read at the Bamberg conference. I am grateful to all those participants who, by suggestions as well as criticism, have helped me to see the issues discussed in this paper more clearly. Special thanks go to Ann Grosch for eradicating mistakes and inelegancies from my English. – This paper was first published in K. Döring/Th. Ebert (eds.): *Dialektiker und Stoiker. Zur Logik der Stoa und ihre Vorläufer*. Franz Steiner Verlag Stuttgart, 1993 111–127.

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